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Kimberly Papillon

Columbia University School of Law

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The Court's Brain:

Neuroscience and Judicial Decision Making in Criminal Sentencing

Kimberly Papillon

Cutting-edge neuroscientific studies provide new insights into the inner workings of the human brain. At the same time, innovations in justice-system data collection have allowed researchers to gather and analyze vast quantities of statistical data in criminal-sentencing patterns. The combination of the two genres of study provides us with the first scientifically based demonstration that well-meaning egalitarian judges may have strong neurophysiologic reactions to defendants, victims, experts, and attorneys. These reactions help us explore whether or not race affects judicial decision making.

The Model Code of Judicial Conduct, caselaw, the Fourteenth Amendment, and the constitutions of every state prohibit judges from using race as a factor in sentencing.¹ However, traditional notions of race bias are based on the idea that disparate outcomes are a simpleminded application of racial bias perpetrated by a select few judges who are not aligned with the values of the justice system.² *The overwhelm-*

ing majority of judges are committed to fairness and impartiality. The overwhelming majority of judges would also agree that racial bias is abhorrent and that it has no place in our justice system. However, the emerging neuroscience compels the thoughtful analyst to inquire about the role of the brain's automatic reactions in decision making.

Neuroscientists explore the brain's processes, but the justice system must be provided with an analysis of how the law shapes the ways that a judge's brain may react. The rigorous analysis required in the application of the four principles of criminal sentencing (i.e., retribution, rehabilitation, deterrence, and incapacitation)³ may allow or even facilitate problematic neurophysiologic reactions in a judge's brain and may result in disparate sentencing patterns. Yet the sentencing disparities are not explored, and the proof that racial bias is the cause is not fully accepted.⁴ This is partially because the ways in which racial bias may manifest in a judge's brain are not easily understood.⁵

Footnotes

1. The Model Code of Judicial Conduct prohibits bias in judicial decision making. This section of the Code is mimicked by many states and the federal courts. Section 2.3 of the Model Code states:

Bias, Prejudice, and Harassment

(A) A judge shall perform the duties of judicial office, including administrative duties, without bias or prejudice.

(B) A judge shall not, in the performance of judicial duties, by words or conduct manifest bias or prejudice, or engage in harassment, including but not limited to bias, prejudice, or harassment based upon race, sex, gender, religion, national origin, ethnicity, disability, age, sexual orientation, marital status, socioeconomic status, or political affiliation, and shall not permit court staff, court officials, or others subject to the judge's direction and control to do so.

(C) A judge shall require lawyers in proceedings before the court to refrain from manifesting bias or prejudice, or engaging in harassment, based upon attributes including but not limited to race, sex, gender, religion, national origin, ethnicity, disability, age, sexual orientation, marital status, socioeconomic status, or political affiliation, against parties, witnesses, lawyers, or others. MODEL CODE OF JUDICIAL CONDUCT § 2.3 (2007).

2. *Tapia v. United States*, 131 S. Ct. 2382, 2386-2387 (2011) (not mentioning race but explicitly recognizing that disparities in sentencing "imposed on similarly situated defendants" were so significant that the Legislature enacted the Sentencing Reform Act of 1984).

3. 18 U.S.C. § 3553(a) (1984) states in part:

(a) Factors to Be Considered in Imposing a Sentence.—The court shall impose a sentence sufficient, but not greater than necessary, to comply with the purposes set forth in paragraph (2) of this subsection. The court, in determining the particular sentence to be imposed, shall consider—

(1) the nature and circumstances of the offense and the history and characteristics of the defendant;

(2) the need for the sentence imposed—

(A) to reflect the seriousness of the offense, to promote respect for the law, and to provide just punishment for the offense;

(B) to afford adequate deterrence to criminal conduct;

(C) to protect the public from further crimes of the defendant; and

(D) to provide the defendant with needed educational or vocational training, medical care, or other correctional treatment in the most effective manner.

See also Tapia, 131 S. Ct. 2382 (stating that factors 2(A) through (D) of 18 U.S.C. § 3553 (1984) are the "four considerations—retribution, deterrence, incapacitation, and rehabilitation— [that] are the four purposes of sentencing generally, and a court must fashion a sentence "to achieve the[se] purposes . . . to the extent that they are applicable" in a given case. (citing 18 U.S.C. § 3551(a) (1984)).

4. *Furman v. Georgia*, 408 U.S. 238 (1972) (Burger, C.J., dissenting). Even while Chief Justice Burger concludes in his dissent that the death penalty was not cruel and unusual and that the evidence submitted did not demonstrate sufficient racial disparities, he clearly acknowledged that [i]f a statute that authorizes the discretionary imposition of a particular penalty for a particular crime is used primarily against defendants of a certain race, and if the pattern of use can be fairly explained only by reference to the race of the defendants, the Equal Protection Clause of the Fourteenth Amendment forbids continued enforcement of that statute in its existing form. *Furman*, 408 U.S. at 389, n. 12.

5. Courts have recognized that implicit or unconscious racial bias exists and that it may affect decision making in other contexts. *See Watson v. Fort Worth Bank & Trust*, 487 U.S. 977, 990-991 (1988) (recognizing in the Title VII context that "subconscious stereotypes and prejudice" are "a lingering form" of the discrimination and that these unconscious biases have "precisely the same effects as a system pervaded by impermissible intentional discrimination").

If a judge has a million minute, consecutive neurophysiologic reactions during a moment in a trial, and if some of those minute reactions are quantitatively or qualitatively different based on whether the defendant is African-American, Latino, Native American, Asian-American, Pacific Islander or Caucasian, then the ultimate outcome of the judge's decision-making process—the sentence itself—will likely differ as well. Some defendants will receive more time in prison than others for the same crime, and race will be a determinative component.

The methodologies for these studies have advanced over time, but they have been grounded in a reductionist approach. To understand the reactions, researchers first sought to identify the neural substrates that activate in reaction to different stimuli (*i.e.*, faces, questions, images, or sounds). Next they sought to create ever more elegant evaluations of the ways to manipulate the stimuli to activate the very same neural substrates. They wanted to know what parts of our brains activate during different cognitive tasks, and then whether biases have an effect on these tasks. The initial research on bias and its origins was an attempt to understand how we think. Its progeny is a quest to understand how or whether we can alter our thought process, presumably for the good of society.

The acceptance of the research is complicated by the fact that the scientific nomenclature and dense calculus-laden findings are often set outside of the realm of understanding of those who could make the most of the conclusions—those who are in a position to create systemic change, such as powerbrokers in business, policymakers in the political arena, and the decision makers within the justice system.⁶ However, if judges are given access to the studies demonstrating the pervasive nature of these brain reactions, and the affect of each differential step on the decision-making process, they may begin to advocate for systemic change.⁷

This article treats the neurophysiologic reactions and the ways that they interact with the four principles of criminal sentencing in four parts. Part I shows that there are precise areas of the brain that activate unconsciously in a racially biased manner, and those are the same parts used to deter-

mine the basis for the appropriate length of incapacitation in prison. Part II shows that biological measures for pain, empathy, and aggression may affect a judge's ability to equitably determine the appropriate amount of retribution required for a crime. Part III demonstrates that judges may unconsciously presume that more punishment is necessary to effectively deter criminal behavior in certain racial groups due to a judge's failure to properly encode those groups in the judge's prefrontal cortex. Part IV demonstrates that automatic associations between crime, threat, and certain racial groups may affect a judge's ability to accurately assess the potential for rehabilitation.

[I]f judges are given access to studies demonstrating . . . these brain reactions, . . . they may begin to advocate for systemic change.

I. SENTENCING THEORY

In criminal courts, judges are expected to execute their duties in a way that ensures they evenly and equally apply the factors set forth in the law to all defendants, regardless of race. They are further expected to remove inappropriate biases from their decision-making process so that the biases will not influence those decisions. *However, it is precisely the inquiry required by the principles of sentencing that calls upon judges to activate the parts of their neuro-anatomy that use biases.*⁸

When sentencing in criminal court, a judge is required to apply a wide range of factors to determine the appropriate length of the sentence. While there is much diversity between the criminal sentencing laws from state to state, and between state sentencing laws and federal sentencing laws, the four basic purposes for punishment in criminal sentencing appear to be universal.

Historically, retribution, rehabilitation, deterrence, and incapacitation have been the four corners of sentencing law.⁹ Over

6. JERRY KANG, IMPLICIT BIAS: A PRIMER FOR COURTS (2009), available at <http://www.ncsc.org/~media/Files/PDF/Topics/Gender%20and%20Racial%20Fairness/kangIBprimer.ashx>.

7. The Model Code Comment to Section 2.3 seems to recognize the possibility that racially biased templates or "stereotypes" may manifest in judicial decision making. It states in part:

[1] A judge who manifests bias or prejudice in a proceeding impairs the fairness of the proceeding and brings the judiciary into disrepute.

[2] Examples of manifestations of bias or prejudice include but are not limited to epithets; slurs; demeaning nicknames; *negative stereotyping*; attempted humor based upon stereotypes; threatening, intimidating, or hostile acts; suggestions of connections between race, ethnicity, or nationality and crime; and irrelevant references to personal characteristics. Even facial expressions and body language can convey to parties and lawyers in the proceeding, jurors, the media, and others an appearance of bias or prejudice. A judge must avoid conduct that may reasonably be perceived as prejudiced or biased.

[Emphasis added.] MODEL CODE OF JUDICIAL CONDUCT, § 2.3, Comment (2007).

8. Kevin R. Reitz, *Sentencing*, in THE HANDBOOK OF CRIME AND PUNISHMENT 542, 548. (Michael Tonry ed., 1998) ("Frankel's central concern was that discretionary actors such as judges and parole officials followed no rhyme or reason beyond their own personal instincts. Punishment decisions, more important than much of the other routine business of the courts, were deserving of at least a comparable degree of care.")

9. Michael M. O'Hear, *The Original Intent of Uniformity in Federal Sentencing*, 74 U. CIN. L. REV. 749 (2006). See also Joshua Dressler, UNDERSTANDING CRIMINAL LAW 13-18 (3d ed. 2001), for further discussion:

A deterrence-based punishment seeks to convince the general community (and, in some formulations, the offender himself or herself) not to commit (or repeat the commission of) the crime for which the offender is being sentenced. An incapacitation-based punishment relies on confinement and supervision in order to prevent future crimes by offenders who are believed to represent particu-

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the years, the popularity of each principle has waxed and waned. While one emerges as the vogue until its time in favor dissipates, another is declared repugnant by factions of society. At times, concurrent warring views may be held by influential groups. For example, in the early 1970s and 1980s, the Model Penal Code emphasized retribution in sentencing; however, more recent

amendments to the code have placed greater emphasis on rehabilitation as a goal. Conversely, in 1984, federal lawmakers rewrote the penal code to reflect their conclusion that rehabilitation was no longer a realistic goal.¹⁰

The four principles of sentencing law are based in large part on determination of the choices available to the actor, the motivation to act, and the level of injury suffered by the victim. Early classical theorists provided insight into the process of rational choice. It is assumed that each actor is concerned with his own suffering, which is a potential penalty for engaging in a criminal act, and that this concern prevents many people from engaging in criminal behavior. It is further assumed that many people choose not to engage in criminal behavior because it is not in alignment with their value system. Determining how to apply the four purposes for punishment is based in part on a judge's conclusions about a convicted individual's inherent dangerousness or proclivity for engaging in criminal behavior, the judge's sympathetic response to the victim and the defendant, and the judge's belief in the ability of the defendant to change his behavior.

INCAPACITATION

Incapacitation, or removing an individual from society and from his capacity to continue to engage in criminal behavior, is necessary for longer periods of time if the convicted person is more dangerous. A judge must increase the length of sentences for those who cannot change and who pose a significant threat. Thus the analysis for determining the need for incapacitation requires the judge to assess the perceived level of threat. However, the neurophysiologic and cognitive process of threat assessment is perhaps the most compelling demonstration of bias available in the scientific literature today.

Validated studies have consistently shown that specific areas of the amygdalae, small subcortical nodes in the brain, activate when subjects feel fear, threat, anxiety, and distrust.¹¹ The progeny of these studies has explored the various stimuli that activate this region and the layers of subtleties that demonstrate the complexities of the reactions.¹² Individuals with diagnosed phobias, specifically arachnophobia (fear of spiders) and ophidiophobia (fear of snakes), demonstrate a significantly higher level of amygdala activation when they view pictures of spiders and snakes in comparison to when they view pictures of other predatory, threatening, or ferocious creatures, such as tigers.

Functional Magnetic Resonance Imaging (fMRI) studies have shown there is increased neural responsivity in the amygdalae to African-American faces.¹³ One of the pioneering studies in this area showed a measurable increase in left-superior amygdala activation when subjects viewed African-American male faces versus Caucasian male faces.¹⁴ All of the study participants were Caucasian.

However, to ensure a thorough analysis of the intersection between neuroscience, cognition, and criminal sentencing, we

lary important recidivism threats. A rehabilitative sentence will involve some form of therapy, treatment, or training to help address the underlying causes of criminal behavior. Just deserts, a form of retributive punishment, is often contrasted with the foregoing utilitarian purposes of punishment; desert does not seek future crime prevention per se, but rather demands punishment as a moral imperative in its own right, often seen as necessary to affirm the status of victims or show respect for the personhood of defendants.

10. *Tapia*, 131 S. Ct. at 2386-87. *Tapia* doesn't mention race but explicitly recognizes that disparities in sentencing were so significant that the legislature enacted the Sentencing Reform Act of 1984. It further recognizes that Congress was also motivated to pass the Act based on the belief that that rehabilitation was not possible in most cases:

"For almost a century, the Federal Government employed in criminal cases a system of indeterminate sentencing." [quoting *Mistretta v. United States*, 488 U. S. 361, 363.] . . . But this model of indeterminate sentencing eventually fell into disfavor. One concern was that it produced "[s]erious disparities in [the] sentences imposed on similarly situated defendants [citation omitted]." *Tapia*, 131 S. Ct. at 2368-87.

11. Sergi G. Costafreda, Michael J. Brammer, Anthony S. David, &

Cynthia H.Y. Fu, *Predictors of Amygdala Activation During the Processing of Emotional Stimuli: A Meta-Analysis of 385 PET and fMRI Studies*, 58 *BRAIN RES. REV.* 57 (2008); Frank Van Overwalle, *Social Cognition and the Brain: A Meta-Analysis*, 30 *HUM. BRAIN MAPPING* 829 (2009).

12. Additionally fear becomes a learned response on a molecular level:

It is generally believed that long-term retention of the effects of learning involve intracellular cascades that are triggered by the influx of calcium during postsynaptic depolarization [citations omitted]. The rise in calcium then triggers several kinases and transcription factors These act, possibly in concert, to induce genes and initiate synthesis of new proteins. Joseph LeDoux, *The Emotional Brain, Fear, and the Amygdala*, 23 *CELLULAR & MOLECULAR NEUROBIOLOGY* 727, 731 (2003).

13. David M. Amodio, Eddie Harmon-Jones, Patricia G. Devine, John J. Curtin, Sigan L. Hartley, & Alison E. Covert, *Neural Signals for the Detection of Unintentional Race Bias*, 15 *PSYCHOL. SCI.* 88 (2004).

14. Elizabeth A. Phelps, Kevin J. O'Connor, William A. Cunningham, E. Sumie Funayama, J. Christopher Gatenby, John C. Gore, & Mahzarin R. Banaji, *Performance on Indirect Measures of Race Evaluation Predicts Amygdala Activity*, 12 *J. COGNITIVE NEUROSCIENCE* 729 (2000).

must continue the inquiry to include the subtleties of the study. The study included much more revealing correlations.¹⁵

The study also used the “startle blink reaction,” which measures the reactions of the muscles around the eyes when the subject is presented with certain stimuli. The startle-blink reaction is a measurable indication of fear. The reaction is very difficult to control or hide, and often the strength with which the subject blinks or the number of times the subject blinks when presented with certain visual stimuli is unknown to the subject himself. Researchers found a direct correlation between the level of amygdala activation and the startle-blink reaction when subjects were presented with pictures of African-American and Caucasian male faces.¹⁶ The subjects who had increased left-superior amygdala activation when viewing African-American faces demonstrated a correspondingly greater startle blink reaction when viewing African-American faces.

The study also collected explicit measures of bias (i.e., bias that the subjects are conscious of or willing to admit to themselves or others). Explicit measures required the subject to state whether or not they held racial preferences and to what degree. The explicit reports demonstrated that when it comes to race, people rated themselves as only marginally biased or not biased at all against African-Americans.¹⁷ Notably, the explicit measures or admissions of bias did *not* correlate with the level of amygdalae activation or the startle-blink reaction.

INCREASED AMYGDALA ACTIVATION BASED ON AFROCENTRIC FACIAL FEATURES

The affect of race on the brain is potentiated by the level of “typically” African or “typically” Caucasian facial features. The more African a person’s face appears, the higher the level of fear; and the more Caucasian a person’s face appears, the lower the level of fear. Research revealed that there was increased amygdala activation in subjects who viewed faces with more pronounced Afrocentric facial features.¹⁸ A series of photographs of both African-American and Caucasian faces were presented to subjects. One photograph was an African-American male face with strong Afrocentric features (full lips, broad nose, dark skin, and curly hair). One photograph was a picture of an African-American male with more Eurocentric features. Another photo was of a Caucasian male with more Afrocentric features. And the final photograph was of a Caucasian person with more Eurocentric features. The amygdala activation was highest for the African-American male face with the Afrocentric features.¹⁹ The next

Research revealed that there was increased amygdala activation in subjects who viewed faces with more pronounced Afrocentric facial features.

15. Mary E. Wheeler & Susan T. Fiske, *Controlling Racial Prejudice: Social-Cognitive Goals Affect Amygdala and Stereotype Activation*, 16 PSYCHOL. SCI. 56 (2005). Caucasian subjects viewed African-American and Caucasian faces and showed increased amygdala activation for the Caucasian faces, particularly when required to categorize the pictures based on the age of the person pictured.

16. The study’s authors noted that while the differential activation was unimpressive, the level of amygdala activation correlated with the level of unconscious or implicit racial bias shown on a well-known psychological test called the Implicit Association Test (IAT). The IAT is a computerized test that is validated with an overwhelmingly statistically significant sample. People have completed over 4.5 million IAT’s online and had their data recorded by Project Implicit, the center that administers the IAT website. Project Implicit, General Information, <http://www.projectimplicit.net/generalinfo.php>.

The IAT measures mistakes made in matching words to specific categories, and it measures, in milliseconds, the time that it takes the subject to make these matches. The amount of delay and the number of mistakes are assessed, and the result demonstrates the strength of the implicit association between the words and the categories. The Race IAT (also known as the Black/White IAT) has four segments, and in one of the segments, it presents two categories: 1) “black and good”; and 2) “white and bad.” Damian Stanley, Elizabeth A. Phelps, & Mahzarin Banaji, *The Neural Basis of Implicit Attitudes*, 17 CURRENT DIRECTIONS PSYCHOL. SCI. 164 (2008). The subject is asked to match words to each category that relates to bad (i.e., agony, horrible, etc.) and words that relate to good (i.e., joy, happy, etc.), as well as photographs of faces of African-American and Caucasian people. In a separate segment, the subjects are required to match the same words (i.e., agony, horrible, joy, happy, etc.) and the same photographs of black and white faces to new compound categories: 1) “black and bad”; and

2) “white and good.”

The level of amygdala activation in the study correlated directly with the level of bias demonstrated on the Race IAT. The study participants whose fMRI’s showed greater amygdala activation when viewing the African-American male faces had correspondingly greater difficulty, slower response time, and more errors when they tried to match the words and pictures with the compound categories “black and good” and “white and bad” than when they had the categories “white and good” and “black and bad.” Jennifer A. Richeson, Abigail A. Baird, Heather L. Gordon, Todd F. Heatherton, Carrie L. Wyland, Sophie Trawalter, & J. Nicole Shelton, *An fMRI Examination of the Impact of Interracial Contact on Executive Function*, 6 NATURE NEUROSCIENCE 1323 (2003) (This examination shows that as implicit racial bias increases and garners resources to fit the level of amygdala and insula reaction, other cognitive skills such as executive functioning are substantially impaired. An fMRI study measured impairment to executive functioning in the dorso-lateral prefrontal cortex (dlPFC) when Caucasians interacted with African-Americans).

17. Brian A. Nosek et. al., *Pervasiveness and Correlates of Implicit Attitudes and Stereotypes*, 18 EUR. REV. SOC. PSYCHOL. 36 (2007).
18. Jaclyn Ronquillo et al., *The Effects of Skin Tone on Race-related Amygdala Activity: An fMRI Investigation*, 2 SOC. COGNITIVE & AFFECTIVE NEUROSCIENCE 39 (2007).
19. Multiple studies demonstrate that people apply racial stereotypes to African-Americans who have stronger Afrocentric facial features than to African-Americans who have weaker Afrocentric facial features. Keith B. Maddox, 8 *Perspectives on Racial Phenotypicality Bias*, PERSONALITY & SOC. PSYCHOL. REV. 383 (2004); Keith B. Maddox & Stephanie Gray Chase, *Manipulating Subcategory Salience: Exploring the Link between Skin Tone and Social Perception of Blacks*, 34 EUR. J. SOC. PSYCHOL. 533 (2004).

The insula has been typically associated with aversion, revulsion, or disgust . . .

highest level of amygdala activation occurred with the African-American face that had more Eurocentric features. The subjects also showed amygdala activation for the Caucasian face with Afrocentric features (though not as strong as the reaction to the African-American faces).²⁰

INSULA ACTIVATION

In addition to stronger amygdala activation for African-American faces, studies also demonstrate a stronger insula reaction among some Caucasian people for African-American faces.²¹ The insula has been typically associated with aversion, revulsion, or disgust; for example, it is the part of the brain that activates when we smell rotting garbage.²² In the study, the subjects viewed faces of African-Americans and Caucasians while undergoing fMRI scans. The insula reaction was significant when the subjects saw the faces of individuals from a different race.

Notably, criminal-law scholars and economists have cited revulsion as a component of the motivation for incapacitation.²³ Someone whose crime is repulsive to a judge will be a prime candidate for removal from society, and for longer periods of time. If a defendant's appearance or identity creates an aversion or repulsion response, this may enhance the adverse response to the crime. The prospect of sending someone back into society who creates the same reaction in a judge as the smell of rotten garbage is likely to be avoided. If the revulsion reaction is potentiated by race, the African-American defendant may receive a longer term in prison based on this impermissible factor. Unfortunately, the process of analyzing the need for incapacitation may include deciding whether or not a defendant can be returned to society or whether they are associated with the emotion of aversion and cannot re-join society for an extended period of time. The analysis requires the judge to tap into the revulsion response to make this assessment, and the revulsion response may be biased by race.

DIMINISHED PREFRONTAL-CORTEX EXECUTIVE FUNCTIONING

In addition to the increased amygdala activation as a result

of racial bias, resources needed for other brain functions will be depleted. As bias increases, garnering resources to fit the level of amygdala and insula reaction, other cognitive skills such as executive functioning are substantially impaired. An fMRI study measured impairment to executive functioning in the dorsolateral prefrontal cortex (dlPFC) when Caucasians interacted with African-Americans.²⁴

In the study, some of the participants interacted with an African-American (possibly to create an amygdala and insula reaction in the brain) and some interacted with a Caucasian person. The participants were then required to perform a task that should have recruited their executive functioning—a cognitive color-matching test called the Stroop Test. The participants who interacted with the African-American person before attempting to complete the color-matching test were slower and less accurate when completing the test. Moreover, those who interacted with the African-American person before they attempted the color-matching test showed diminished activation in their dorsolateral prefrontal cortex.

In this context, if executive functioning is diminished due to neurophysiologic reactions to African-Americans, then the decision maker will be less able to access the proper rules to apply to the sentencing decision but will simply apply default rules (such as implicit associations equating “Black” with “bad”) to the decision instead.

Aversion and disgust, when combined with fear, threat, distrust, and diminished executive functioning, create a formidable combination for the African-American defendant to overcome.²⁵ A judge's determination of the level of threat a defendant poses and whether the defendant should be separated from others in society is not simply permissible, it is required in the incapacitation analysis. However, in assessing these factors, the judge may include the reaction of fear, threat, and aversion. The neurophysiologic reaction to the African-American male, particularly the African-American male with strong Afrocentric facial features, is worthy of further discussion. The potential connection to resulting disparities in criminal sentencing is stark.

AFROCENTRIC FACIAL FEATURES AND CRIMINAL SENTENCING

Afrocentric facial features have an impact on the length and type of sentences given to inmates.²⁶ A Stanford University

20. Y. Moriguchi, T. Ohnishi, T. Kawachi et al., *Specific Brain Activation in Japanese and Caucasian People to Fearful Faces*, 16 NEUROREPORT 133 (2005).

21. Matthew D. Lieberman, Ahmad Hariri, Johanna M. Jarcho, Naomi I. Eisenberger, & Susan Y. Bookheimer, *An fMRI Investigation of Race-Related Amygdala Activity in African-American and Caucasian-American Individuals*, 8 NATURE NEUROSCIENCE 720 (2005).

22. P. Wright, G. He, N. A. Shapira, W. K. Goodman, & Y. Liu, *Disgust and the Insula: fMRI Responses to Pictures of Mutilation and Contamination*, 15 NEUROREPORT 2347 (2004).

23. Toni M. Massaro, *Shame, Culture, and American Criminal Law*, 89 MICH. L. REV. 1880 (1991).

24. Jennifer A. Richeson & Sophie Trawalter, *Why Do Interracial Interactions Impair Executive Function? A Resource Depletion Account*, 88 J. OF PERSONALITY & SOC. PSYCHOL. 934 (2005);

Jennifer A. Richeson, Sophie Trawalter, & J. Nicole Shelton, *African-Americans' Racial Attitudes and the Depletion of Executive Function after Interracial Interactions*, 23 SOCIAL COGNITION 336 (2005).

25. While it may be argued that in-group preference can be shown by any racial group, it must be noted that the majority of judges in the U.S. are Caucasian. Carl Tobias, *Commentary: Diversity and the Federal Bench*, 87 WASH. L. REV. 1195 (2010). In many state courts, over 90% of the judges are Caucasian. With few exceptions, the overwhelming majority of state supreme courts are all Caucasian.

26. Irene V. Blair, Charles M. Judd, & Kristine M. Chapleau, *The Influence of Afrocentric Facial Features in Criminal Sentencing*, 15 PSYCHOL. SCI. 674 (2004); Irene V. Blair, Charles M. Judd, & Jennifer L. Fallman, *The Automaticity of Race and Afrocentric Facial Features in Social Judgments*, 87 J. PERSONALITY & SOC. PSYCHOL. 763 (2004).

study demonstrated that facial features of African-American male defendants correlate to imposition of the death penalty.²⁷ The study showed that as the faces of the defendants depicted higher levels of Afrocentric facial features, the defendants were more likely to receive the death penalty. Using mug shots of faces of men convicted of crimes for which the death penalty could be imposed, the researchers coded the faces for Afrocentric features. Those individuals with more Afrocentric facial features were more likely to receive the death penalty when controlling for numerous other factors.²⁸ The level of Afrocentric facial features potentiated the desire of the jury to impose the death penalty. This result aligns with the fMRI studies showing increased amygdala and insula activation for African-Americans.

DISPARITIES IN CRIMINAL SENTENCING AND THE NEUROSCIENTIFIC CORRELATES

Nationwide, African-Americans constitute 38% of the jail and prison population, but they constitute only 13% of the United States population.²⁹ In response to such statistics, many immediately advance the rationale that African-Americans simply commit more crimes and, therefore, they are overrepresented in the prison population. However, a more thorough analysis of the statistics demonstrates a disturbing disparity not explained by alleged increased crime rates. According to the U.S. Department of Health and Human Services, in 2006, African-Americans made up only 14% of illegal-drug users, in parity with their 13% representation in the U.S. population. Yet they are overrepresented in the subsequent steps in the criminal justice pipeline. African-Americans represent 35% of arrests for drug offenses, 53% of convictions for drug offenses, and 45% of those incarcerated for drug offenses.³⁰ Additionally, the more lenient sentencing option of probation is given more freely to Caucasian offenders. In 2006, 56% of those on probation were Caucasian, while only 29% were African-American.³¹

FEDERAL SENTENCING STUDY

In a study of sentencing patterns nationwide, researchers compiled data from 77,256 defendants sentenced in federal courts under the United States Sentencing Commission Guidelines. The researchers conducted a regression analysis, which controlled for multiple factors that should affect the length of sentences, including crime seriousness or offense level and criminal history.³²

Offense level was determined by the severity of the offense. The offense was assigned a base value that correlated to the offense level identified in the code. This base value was then increased or decreased based on other characteristics of the offense (i.e., whether the offense resulted in a substantial likelihood of death or serious bodily injury; the monetary amount gained by the offender; whether the victim was a minor; whether the crime was committed with a gun, etc.). The study also controlled for criminal history, including the severity and number of past offenses and whether the offense was committed while on probation or parole, etc.³³

While all of these factors affected sentencing, there was still a disparity in the sentences handed down, and race was the determinative factor. African-Americans received 5.5 more months in prison than their Caucasian counterparts for the same crimes, with the same criminal history and the same aggravating and mitigating factors. Latinos received 4.5 months in jail more than Caucasians who were charged with the same crime. A combined group of Asians, Pacific Islanders, Native Americans, and those of mixed heritage was included in the analysis as well. This group received 2.3 months more in prison than their Caucasian counterparts. These disparities remained significant even when the researchers controlled for income, education level, citizen-

While all of these factors affected sentencing, . . . race was the determinative factor.

27. David C. Baldus, George Woodworth, David Zuckerman, Neil Alan Weiner, & Barbara Broffitt, *Racial Discrimination and the Death Penalty in the Post-Furman Era: An Empirical and Legal Overview, with Recent Findings from Philadelphia*, 83 CORNELL LAW REVIEW 1638 (1998) (showing that African-American defendants receive the death penalty more frequently than their Caucasian counterparts).

28. Jennifer L. Eberhardt, Paul G. Davies, Valerie J. Purdie-Vaughns, & Sheri Lynn Johnson, *Looking Deathworthy: Perceived Stereotypicality of Black Defendants Predicts Capital-Sentencing Outcomes*, 17 PSYCHOL. SCI. 383 (2006).

29. ASHLEY NELLIS, JUDITH GREENE, & MARC MAUER, REDUCING RACIAL DISPARITY IN THE CRIMINAL JUSTICE SYSTEM: A MANUAL FOR PRACTITIONERS AND POLICYMAKERS (2008), available at http://www.sentencingproject.org/doc/publications/rd_reducingracialdisparity.pdf.

30. *Id.* at 8, citing WILLIAM J. SABOL, HEATHER COUTURE, & PAIGE M. HARRISON, PRISONERS IN 2006 (2007), available at <http://bjs.ojp.usdoj.gov/content/pub/pdf/p06.pdf>.

31. Lauren E. Glaze & Thomas P. Bonczar, *Probation and Parole in the*

United States (2007), available at <http://bjs.ojp.usdoj.gov/content/pub/pdf/ppus07st.pdf>.

32. 18 U.S.C. § 3553(a)(1) (1984) specifically calls for the judge to consider the characteristics of the defendant as well as the criminal history:

(a) Factors to Be Considered in Imposing a Sentence.—The court shall impose a sentence sufficient, but not greater than necessary, to comply with the purposes set forth in paragraph (2) of this subsection. The court, in determining the particular sentence to be imposed, shall consider—
(1) the nature and circumstances of the offense and the history and characteristics of the defendant”
[Emphasis added.]

33. To determine the severity of past convictions, offenders receive a designated number of criminal-history points for every prior sentence of imprisonment exceeding 1 year and 1 month. The researchers also quantified criminal history by adding points based on whether the offense was committed while the offender was under any criminal justice sentence, including probation, parole, supervised release, imprisonment, work release, or escape status.

The researchers found that African-American inmates with more Afrocentric features received longer sentences.

Pacific Islanders, and Native Americans still received 2.3 more months in federal prison.

The additional time in prison for being African-American is equivalent to the additional time provided for a prior felony conviction. Thus, in this context, being African-American was equivalent to committing an additional crime.

AFROCENTRIC FACIAL FEATURES AND THE AMYGDALA

The most telling correlation between amygdala studies and statistical data can be found with Afrocentric facial features. Amygdala activation increases as the level of Afrocentric facial features of the person being viewed increases. A recent study found that sentence length also increases as Afrocentric facial features increase. Researchers studied Afrocentric facial features across racial lines. Using mug shots, faces of African-American men and Caucasian men who had been convicted of felonies in Florida were coded for Afrocentric features on a scale of 1 to 9, 9 being the highest and 1 being the lowest. The researchers then reviewed the case files and controlled for 11 separate factors that may also affect the length of the sentence, such as seriousness of the primary offense, number of additional concurrent offenses, seriousness of additional concurrent offenses, number of prior offenses, and seriousness of prior offenses.

The researchers found that African-American inmates with more Afrocentric features received longer sentences. Inmates who were one standard deviation greater than the norm for Afrocentric features received 7 to 8 months more in jail than inmates who were 1 standard deviation below, controlling for the 11 other factors. The stronger facial features accounted for a 2% increase in sentence length. While this may seem minor, it should be noted that having an additional concurrent serious offense charged increased the sentence length by 3%. *In other words, having a broader nose, darker skin, fuller lips, and curlier hair was almost equivalent*

ship, age, language status, etc. After these adjustments for socioeconomic factors, African-American defendants received 4.5 months more in prison than Caucasians for the same crime; Latino defendants received 2.5 more months in jail; and the aggregate group of Asian-Americans,

to being saddled with an additional serious criminal charge. It was as if the Florida Penal Code listed looking African-American as a crime as serious as aggravated assault or possession with intent to sell.

Surprisingly, Caucasian inmates with Afrocentric features also received longer sentences than their Caucasian counterparts with more Eurocentric features. Once again, inmates who were one standard deviation greater than the norm for Afrocentric features received 7 to 8 months more in jail than inmates who were 1 standard deviation below, controlling for seriousness of crime, prior convictions, additional crimes charged, and several other factors.

We need not stop the inquiry here, however. The four principles that underlie the sentencing process go beyond the simple detection of threat or aversion.³⁴ Retribution includes the assessment of appropriate levels of counter-injury.

II. RETRIBUTION

Retribution in sentencing theory is based on the conclusion that a crime “demands punishment as a moral imperative in its own right.”³⁵ As with the other factors in sentencing, retribution includes a consideration of the impression left by a defendant on the mind of a judge (i.e., culpability and intent).³⁶ However, retribution also requires the judge to consider the victim. The judge must consider the level of pain or injury suffered by the victim along with the victim’s value or status, affording the victim the right to have a counterbalancing punishment for a defendant that fits the crime.³⁷ Indeed, the calculation surrounding what charges to bring and what chances a case has in front of a jury includes, at its core, whether or not there is a sympathetic victim that the jury will relate to and want to vindicate.

Empathy is an outgrowth of an individual’s ability to relate to the victim—to find a connection with the victim’s identity and plight so that the individual can imagine the pain of the victim as his or her own pain. For retribution, the analysis of the level of the injury and the empathy and value for the victim are inextricably intertwined. The law explicitly and reasonably increases penalties for the same injury suffered by someone who is helpless (e.g., a child or an elderly person) verses someone who is capable of defending themselves. Likewise, retribution may be unconsciously and impermissibly increased for the same injury suffered by someone for whom a judge feels more empathy versus someone for whom the judge feels very little or no empathy. Additionally, there is the ever-present “how dare you” factor. This embodies the notion that as an individual empathizes

34. FRANCIS A. ALLEN, *THE DECLINE OF THE REHABILITATIVE IDEAL: PENAL POLICY AND SOCIAL PURPOSE* (1981).

35. See O’Hear, *supra* note 9, citing DRESSLER, *supra* note 9, stating:

Just deserts, a form of retributive punishment, is often contrasted with the foregoing utilitarian purposes of punishment; desert does not seek future crime prevention per se, but rather demands punishment as a moral imperative in its own right, often seen as necessary to affirm the status of victims or show respect for the personhood of defendants.

36. Those who seek to injure or who show callous disregard for the

injury they cause in the commission of their crime are more culpable. Conversely, those who act out of negligence are less culpable and, therefore, deserving of lower levels of retribution. The level of injury caused is also a factor used to increase or decrease the level of retribution. A judge’s ability to view that injury objectively will affect his assessment of the level of injury.

37. The theory that there are victims who are undeserving of relief for injury is most clearly seen on the face of the law in the civil context in the doctrine of unclean hands.

with the pain of a victim, he is offended that anyone would hurt a person for whom he can feel such empathy. A judge may place greater value on a victim if the judge relates to the victim and if the judge more poignantly feels the victim's pain. The value or status of the victim is, therefore, also a part of the calculation for retribution.³⁸ Thus, for the purposes of retribution, culpability is potentiated by the empathy felt for the victim.³⁹

Another factor that modulates the level of retribution downward is the level of pain and sympathy felt for the Caucasian defendant. A prison sentence will inflict pain on the defendant. If a judge has an empathetic pain response for a defendant then he will be less motivated and less likely to impose a higher level of punishment and pain in the form of a prison sentence.

As a judge determines the appropriate level of retribution, he is required to assess the culpability and the level of empathy that should be applied towards both the victim and defendant. However, this assessment, like the threat assessment for incapacitation, is inextricably and disturbingly intertwined with neurophysiologic reactions and bias.

THE PHYSIOLOGY OF PAIN EMPATHY

A study demonstrates that pain empathy may be affected by race. In the study, participants were monitored for physiologic reactions as they were shown videos of three different hands being stuck by a hypodermic needle. In a randomized order, participants watched a Caucasian hand, an African-American hand, and a purple hand being stuck by a hypodermic needle. Pain empathy is measured by the level of sensory motor contagion and cortical spinal inhibition. If an individual empathizes with another person's pain, that individual will have a physiologic reaction that is akin to actually suffering the physical injury. When an injury occurs in the body, the brain attempts to dampen down the level of pain felt. The brain achieves this by lessening or inhibiting the level of sensation felt in the injured area—this is called cortical spinal inhibition. When someone watches another person being injured and he feels empathy for the pain, he also feels cortical spinal inhibition. It is as if the pain experience is “contagious.” This phenomenon is called sensory motor contagion. Therefore, if, as a person observes another person receiving a painful hand injury, the observer has an increased level of cortical spinal inhibition in his own hand, then scientists conclude the observer empathizes with the pain of the injured person. Conversely, if the observer does not feel empathy for the pain he witnesses, then his brain will not initiate cortical spinal inhibition because there is no risk of sensory motor contagion. The brain does not need to dampen down the empathetic sensation if the observer is not having an empathetic response.

In the study, the Caucasian subjects experienced high levels of cortical spinal inhibition and sensory motor contagion

when they watched the Caucasian hand being stuck with the hypodermic needle.⁴⁰ When the Caucasian subjects saw the purple hand being stuck, they demonstrated a measurable but low level of pain empathy. However, as the Caucasian subjects saw the African-American hand being stuck

in the same painful manner, there was an opposite reaction to cortical spinal inhibition. There was an absence of empathy. Notably, the level of pain empathy felt correlated with the level of unconscious or implicit racial bias as shown on the Race IAT. The higher the level of implicit racial bias against African-Americans on the IAT, the lower the amount of empathy for the pain of the black person. Since 74% to 87.1% of the Caucasian population in America shows implicit bias against African-Americans on the Race IAT, it is possible that a significant percentage of the population may show a differential level of pain empathy toward people of African descent and a higher level of pain empathy toward Caucasians. Additionally, since the Race IAT scores among Caucasian judges are in alignment with the level of IAT results for the general population, it can be reasonably concluded that similar conclusions can be drawn for some judges.

Additionally, African-American subjects felt greater empathy for the black hand and less empathy for the Caucasian hand. However, since the level of empathy correlates with Race IAT scores and African-Americans' IAT results in large samples demonstrate that one third of African-Americans show bias in favor of Caucasians, one third show no bias toward either racial group, and only one third show bias against Caucasians, the possibility of differential pain empathy is reduced. Additionally, since African-American judges show a higher level of implicit preference for Caucasians than the general African-American population, the possibility that African-American judges may feel less pain empathy for Caucasian victims is further significantly diminished.

If a judge feels greater pain empathy for Caucasian defendants, he may not provide those defendants with long prison sentences. As the judge sends the defendant to prison, he may unconsciously imagine the harm occurring to himself. This differential and racially biased empathetic reaction may account for both the lower sentences and the downward departures from the federal sentencing guidelines for Caucasian defendants. Additionally, if a judge feels greater empathy for the pain of the victim, then any cases with Caucasian victims may result in higher sentences. The synergy between these two aspects of pain sympathy may explain why African-American defendants who are convicted of killing Caucasian victims are most frequently given

[T]he level of pain empathy felt correlated with the level of unconscious . . . racial bias . . . on the Race IAT.

38. O'Hear *supra* note 9.

39. *Id.*

40. Alessio Avenanti, Angela Sirigu, & Salvatore M. Aglioti, *Racial*

Bias Reduces Empathic Sensorimotor Resonance with Other-Race Pain, 20 *CURRENT BIOLOGY* 1018 (2010).

At first blush, it may offend the sensibilities of judges to claim that application of retribution is tied to aggression.

the death penalty by juries.⁴¹

III. AGGRESSION AND THE AMYGDALA

The retribution factor inherently recognizes that the penalty to be provided will cause pain or injury to the defendant. In fact, some penal codes state

that the purpose of sentencing is no longer rehabilitation but punishment.⁴² Whether retribution is a primary or secondary consideration, retribution analysis requires a judge to determine how much pain or injury to cause.

The process whereby one person intentionally causes another person pain, even if that pain is justified, is aggression. The lay definition of aggression has both negative and positive connotations. However, the psychological and biological definition of aggression is limited to wanting or purposely acting to cause pain or injury to another.⁴³ All human aggression is not physical aggression. Injury or harm caused intentionally is aggression, even when that hurt or harm is simply demeaning another person, causing them psychological distress, or incarcerating them.

While painted in well-meaning nomenclature designed to increase society's comfort level with the task of placing another human being in jail, the process of incarceration can be an outgrowth of aggression. The application of retribution can be based on revenge or retaliation. The principle's relationship to revenge or retaliation is so basic in the law that it can be found in the popular hornbook, *Criminal Law*, which states:

Retribution: This is the oldest theory of punishment, and the one which still commands considerable respect from the general public. By this theory, also called *revenge* or *retaliation*, punishment (the infliction of suffering) is imposed by society on criminals in order to obtain revenge, or perhaps (under the less emotional concept of retribution) because it is only fitting and just that one who has caused harm to others should himself suffer for it. [Emphasis added.]⁴⁴

At first blush, it may offend the sensibilities of judges to claim that application of retribution is tied to aggression. The judicial canons look down upon displays of some forms of aggression from individual judges, but those displays are ones that demonstrate malice or overt self-satisfaction with causing pain to a defendant. Such aggression is distasteful and not publicly sanctioned. However, human aggression can be channeled through sanctioned processes. It can be aligned with governmental purposes. It can even be mandated by law. Legal scholars and the United States Supreme Court have recognized the purpose of punishment as related to government-sanctioned aggression.

The amygdala is intimately involved in aggression.⁴⁵ The amygdala initiates aggressive behavior in human and other mammals, and its involvement in aggression is linked to the racial-bias studies involving the amygdala. Higher levels of amygdala activation for African-American faces will likely result in higher levels of aggression. However, the level of activation is only one aspect of the amygdala reaction. The length of the neuropathway is also implicated in aggression for the amygdala.

The amygdala may be activated by a series of preceding

41. See Eberhardt *et al.*, *supra* note 29, stating:

Even when statistically controlling for a wide variety of nonracial factors that may influence sentencing, numerous researchers have found that murderers of White victims are more likely than murderers of Black victims to be sentenced to death [citations omitted]. The U.S. GAO (1990) has described this race-of-victim effect as "remarkably consistent across data sets, states, data collection methods, and analytic techniques" [citation omitted]. African-Americans have historically been sentenced to the death penalty disproportionately particularly for the crime of interracial rape.

See also Koeninger, *Capital Punishment in Texas, 1924-1968*, 15 CRIME & DELINQ. 132 (1969); Note, *Capital Punishment in Virginia*, 58 VA. L. REV. 97 (1972).

42. See LAURIE L. LEVENSON, ALEX RICCIARDULLI, CALIFORNIA CRIMINAL LAW, THE EXPERT SERIES (2008), stating:

In 1976, the California legislature enacted the Determinate Sentencing Law, establishing that punishment should be the purpose of imprisonment rather than rehabilitation. The California Determinate Sentencing Law states:

"The Legislature finds and declares that the purpose of imprisonment is punishment." Citing California Penal Code Section 1170 (a).

By this action, California became the first state in the nation to declare retribution to be the official object of punishment for crime. [Emphasis added.]

43. See Craig A. Anderson & L. Rowell Huesmann, *Human Aggression:*

A Social-Cognitive View 296, 298 in THE SAGE HANDBOOK OF SOCIAL PSYCHOLOGY, CONCISE STUDENT EDITION (Michael A. Hogg & Joel Cooper eds., 2007), stating:

We define human aggression as *behavior directed towards an individual carried out with the approximate (immediate) intent to cause harm*. Furthermore the perpetrator must believe that the behavior will harm the target, and that the target is motivated to avoid the behavior. Actual harm is not required. [Citing ROBERT A. BARON, DEBORAH R. RICHARDSON, HUMAN AGGRESSION (2d ed. 2004); RUSSELL G. GEEN, HUMAN AGGRESSION (2d ed. 2001); LEONARD BERKOWITZ, AGGRESSION—ITS CAUSES, CONSEQUENCES, AND CONTROL (1993); and Brad J. Bushman & Craig A. Anderson, *Media Violence and the American Public: Scientific Facts Versus Media Misinformation*, 56 AM. PSYCHOL. 477 (2001).]

44. WAYNE R. LAFAYE, CRIMINAL LAW, HORNBOOK SERIES (4th ed. 2003).

45. See Ralph Adolphs, Daniel Tranel, Hanna Damasio & Antonio R. Damasio, *Fear and the Human Amygdala*, 75 J. NEUROSCIENCE 5879 (1995), stating:

Studies of the amygdala in humans have come largely from two sources: surgical lesions and electrical stimulation. Although surgical lesions of the human amygdala suffer from the drawback that they may be incomplete, and that the subjects may not be normal prior to the surgery [citations omitted], a review of these cases [citation omitted] strongly supports the role of the amygdala in processing fear and aggression and in social behavior.

steps. The longer path to the amygdala begins at the thalamus, proceeds through the sensory cortex, and then reaches the amygdala. The sensory cortex “weeds out” extraneous or inappropriate considerations and recognizes subtleties before the amygdala is activated. For instance, a face that is not smiling may be seen as angry or simply unhappy. If the observer is able to maximize the number of steps before initiating aggression, he will consider the possibility that the person is not smiling because the person is on trial for a crime, and is therefore scared and possibly depressed.

However, when a person has a predisposition to find certain faces to be threatening or to conclude that certain individuals should invoke aggression, the brain will take a neuro-pathway “shortcut.” The thalamus will activate and then the amygdala will activate, skipping the sensory cortex.⁴⁶ Thus, fewer extraneous components will be weeded out of the decision-making process and more subtleties will be missed. A person who is not smiling may be seen, unconsciously, as angry or hostile instead of scared and sad. This neuro-shortcut increases the likelihood that otherwise non-threatening faces will be seen as threatening and will initiate a higher level of aggression.

Increased hostility and increased aggression have been shown in studies utilizing race as a factor. A recent study demonstrates that African-Americans, independent of circumstances, engender hostility in individuals from other groups. In an experiment conducted at New York University, participants were required to engage in the boring task of counting circles flashed in a computer screen.⁴⁷ They were to record whether or not an odd or even number of circles appeared on the screen, and after they counted the number of circles and recorded the answer, yet another picture of circles would appear on the screen for them to count and record. As they proceeded with the task, pictures were flashed subliminally on the computer screen. For some of the participants, a picture of a young African-American man was flashed subliminally; and for another, a picture of a young Caucasian man was flashed. After the participants counted the circles on 130 consecutive slides flashed in the screen, the computer crashed. The participants were told that all of the data had been lost and they would be required to begin the exercise again.

The researchers then meticulously measured the level of hostility demonstrated by each group after the computer crashed. Three individuals, including 2 who were blind to condition, used a unipolar scale of hostility ranging from 0 to 10 to rate the participants. All of the individuals who rated the participants consistently concluded that those who saw the subliminal African-American male pictures during the counting task were more hostile than those who saw the Caucasian male pictures.

Increased hostility toward an individual defendant, not engendered by the evidence, creates an additional barrier to fair treatment under the law. It could inspire a judge to unknowingly impose more severe retribution for a criminal act. It may also decrease a judge’s willingness to exercise his discretion to ensure due process, such as allowing for certain witnesses, providing sufficient latitude during questioning, and sustaining or denying motions in limine so that certain evidence is admitted or excluded.

Individuals who are seen as pathological or who have the proclivity to commit crimes will be seen as less able to respond to rehabilitative efforts.

IV. REHABILITATION

While retribution requires assessment of culpability, the analysis for rehabilitation requires a determination of whether the convicted criminal’s character is resilient enough that he can refrain from committing crimes in the future. Rehabilitation can be viewed as increasing a prison sentence under the guise that the time in prison causes a convicted criminal to change and improve behavior. This theory has been roundly rejected by legislatures and many judges. Conversely, rehabilitation can be viewed as the rationale for imposing probation, counseling, anger management, educational, and job-skill programs—correspondingly reducing the length of time in prison.⁴⁸ Under either view of retribution, if a defendant is seen as less amenable to change, he will receive more time in prison. Individuals who are seen as pathological or who have the proclivity to commit crimes will be seen as less able to respond to rehabilitative efforts. If the criminal is seen as having an endemic criminal nature, then he cannot be rehabilitated. Just as in the analysis for incapacitation, rehabilitation is also linked to dangerousness and potential threat. Those who are inherently more dangerous and pose a greater potential threat are less likely to respond to rehabilitation efforts.

AFRICAN-AMERICANS, NEGATIVE CONCEPTS, AND CRIME

Researchers have attempted to determine whether there is an implicit association between African-Americans and crime, and to determine if African-Americans are seen as having an endemic criminal nature. In a study conducted at Stanford University, researchers first primed the participants with either a picture of an African-American male or a Caucasian male (a third control group received no priming

46. M. Fendt & M.S. Fanselow, *The Neuroanatomical and Neurochemical Basis of Conditioned Fear*, 23 *NEUROSCIENCE & BIOBEHAVIORAL REV.* 743 (1999).

47. John A. Bargh, Mark Chen & Lara Burrows, *Automaticity of Social Behavior: Direct Effects of Trait Construct and Stereotype Activation*

on Action, 71 *J. PERSONALITY & SOC. PSYCHOL.* 230 (1996).

48. *Id.* See O’Hear, *supra* note 9; see also DRESSLER, *supra* note 9: “A rehabilitative sentence will involve some form of therapy, treatment, or training to help address the underlying causes of criminal behavior.”

Participants primed with the African-American face were able to correctly identify the crime-related objects more quickly

images).⁴⁹ After the participants were primed, they were shown degraded images of various objects. Some of the objects were crime related: guns, knives, and handcuffs. Other objects were not crime related, such as a suitcase and a piece of fruit. Each image was initially shown in a blurry state—so blurry that the object could not be identified.

But with each advancing frame, the image on the screen became increasingly clear.

However, there was a significant difference in how quickly participants could identify the crime-related objects based upon the priming mechanism used. Participants primed with the African-American face were able to correctly identify the crime-related objects more quickly than the non-crime-related objects. Crime-related objects were identified on average by the 18th frame when subjects were primed with the African-American face (non-crime-related objects were identified at approximately the 23rd frame). It would be reasonable to assume that the subjects primed with the Caucasian face would identify the crime-related and non-crime-related objects in the same way as the subjects primed with the African-American face. However, the subjects identified the non-crime-related objects at almost the same frame (24th) on average (compared to 23rd for the non-crime related objects) as the subjects who were not primed and the subjects who were primed with the African-American face. However, subjects primed with the Caucasian face were not able to identify the crime-related object until approximately the 27th frame, almost 10 frames later than the group primed with the African-American face and 4 frames later than the participants who were not primed with any pictures. The Caucasian face actually *diminished* the subjects' ability to identify the crime-related objects. Notably, participants who were not primed with any faces identified both the crime-related and non-crime-related objects at approximately the 23rd frame.

Surprisingly, this result demonstrated two important concerns. First, the participants needed far less information to conclude that crime was at issue when they were thinking about African-American males. Second, the participants resisted drawing the conclusion that crime was at issue when they were still thinking about Caucasian male faces. African-Americans are not just more closely associated with crime in the eyes of their Caucasian counterparts, and therefore at risk of receiving higher sentences; being Caucasian provides a bonus or advantage, so that the imposition of a Caucasian defendant will cause the decision maker to avoid the conclusion that crime is at issue. By extension, it will require less information or evidence for a judge or jury to conclude that an African-American person is related to alleged criminal

activity. The burden of proof is higher for a Caucasian defendant under this theory and the burden of proof is lower for African-Americans.

WEAPONS IDENTIFICATION TEST

In another experiment, the participants were required to engage in a quick-reaction, computerized test to quickly and accurately identify pictures of both construction-related tools and guns—the Weapons Identification Task (WIT). The participants were primed with a picture of either an African-American or a Caucasian male face. The picture of the face would flash on the screen and would be immediately followed by a picture of a tool or a gun. The participants would then be required to quickly press a pre-assigned keyboard key to indicate whether they had seen a gun or a tool. If they took too long to identify the gun or tool, the screen would post a message saying they had run out of time for that particular identification. Just as with the Race IAT, the computer recorded the number of errors that the participant made and the amount of time in milliseconds that it took the participant to respond after each picture of the gun or the tool was flashed onto the screen. Participants were required to identify over 100 pictures during the exercise.

The researchers found overwhelmingly that participants were more likely to mistake the tool for a gun immediately after they saw the picture of an African-American face flashed on the screen. They also found that the participants were more likely to mistake a gun for a tool immediately after they saw the picture of a Caucasian face flashed on the screen.

Additionally, the researchers found that the responses were differentially delayed. Participants took longer to identify the pictures of tools when they followed an African-American face than when they followed a Caucasian face. Additionally, participants took longer to identify the picture of a gun when it was followed by a Caucasian face than when it followed an African-American face. The researchers concluded that the pictures of the African-American faces facilitated the responses to guns and interfered with the responses to tools.

These studies have disturbing implications for the criminal justice system. If finders of fact more quickly and easily analyze, recognize, and associate images of crime objects when primed with faces of African-Americans than with Caucasians, the association of crime objects as evidence to certain defendants may occur with greater ease as well. Moreover, if viewing a Caucasian face diminishes a person's ability to see, recognize, and associate crime objects, being Caucasian affords an impermissible advantage.

If a judge sees a defendant as closely linked with crime regardless of the facts of the case, regardless of the indications that he can be rehabilitated, the judge might be less likely to apply rehabilitation as a potential solution to criminal behavior. A defendant who is endemically criminal cannot be easily changed, so rehabilitation efforts would be wasted on such a

49. Jennifer L. Eberhardt, Phillip Atiba Goff, Valerie J. Purdie, & Paul G. Davies, *Seeing Black: Race, Crime, and Visual Processing*, 87 J.

defendant. Therefore, the use of rehabilitation as a counterbalance to the length of incapacitation would be folly.

SHOOT NO-SHOOT TEST

In addition to assessing endemic criminal behavior, the rehabilitation analysis is also closely aligned with the assessment of threat. The prior discussion of threat assessment and its neurophysiologic correlates reveals a striking racial disparity. A recent study reveals how racial bias concurrently affects threat assessment and conclusions that African-Americans are endemically criminal.

In the Shoot No-Shoot test, conducted at the University of Chicago, pictures of African-American and Caucasian men in various poses are flashed on the computer screen.⁵⁰ In each picture, the person depicted is holding either a gun, a cell phone, or a soda can. The test subjects, or “players,” must as quickly as possible press a key on the computer keyboard to indicate that they will either “shoot” or “not shoot” the man in the picture. They are directed to hit the designated keyboard key to “shoot” if they believe that the man has a gun, or to hit the key for “no shoot” if they believe that the man in the picture has a soda can or a cell phone. As with the other reaction-time-measure tests mentioned in previous studies, the computer measures the length of time it takes the player to respond in milliseconds and records the number of errors.

Previous studies have repeatedly found that the overwhelming majority of players take longer to determine that the African-American man is holding a soda can or a cell phone than it takes them to make the same determination for the Caucasian man. Likewise, the overwhelming majority of players will make more mistakes and “shoot” the African-American man when he is not holding a gun than they will when deciding to shoot or not shoot the Caucasian man.

While the other studies demonstrated that the Caucasian participants showed a stronger association between crime, threat, or fear and African-Americans, this study demonstrates that that association led to differential action. The subjects in this study were required to make a choice that, while simulated, served as a protective measure in response to a potential or perceived threat. Arresting, charging, convicting, and sentencing individuals are all protective measures taken in response to potential or perceived threats. If associations cause people to take more severe protective measures, those concerned with fairness must become increasingly concerned about whether there is differential application of the laws to African-Americans in the criminal justice system.

DETERRENCE

In setting prison sentences, a judge must determine how long each defendant would need to be in prison to deter him from future criminal behavior. The United States Code states that a judge “shall consider” in determining a sentence how

the sentence will “afford adequate deterrence to criminal conduct.”⁵¹

Numerous economists have treated a judge’s decision-making process on deterrence as a calculation that involves the weighing of factors and setting of values.⁵² A judge will likely take into account whether or not a defendant will be partially deterred by the defendant’s own ethical considerations, his remorse for the injury he has caused, and his discomfort in a prison setting. Ethical considerations, remorse for injuring another being (regardless of the potential recourse), and the ability to reason in advance to avoid repercussions are primarily human attributes. Conversely, if a judge were seeking to deter a household pet from rule breaking, he would decide that the pet’s ethical considerations and remorse for rule breaking were minimal and the pet’s ability to reason through repercussions would be based on the judge repeatedly punishing the pet in the past. This is not to equate any defendant with a pet. Rather the example is designed to demonstrate the extremes of human encoding. In practice human encoding occurs on a continuum as opposed a binary state. To make these determinations about a defendant in a criminal case, a judge must create a neurophysiologic reaction in his own brain to encode the defendant as more or less human. The judge also must activate the neural substrates that come online when predicting the behavior and assessing the social values of individuals. Therefore, to determine the necessary level of deterrence and set the proper length of a prison sentence accordingly, the judge must activate the neurophysiologic process in earnest for encoding humanness and assessing values. Herein lies the problem. The activation of the encoding process may occur in significantly different ways based on the defendant’s attributes. And the activation of the neural substrates will occur differently if the judge sees the defendant as similarly situated to himself.

The assessment of the necessary level of deterrence is based upon a series of determinations. In an ordered society, the presumption is that most actors will engage in a rational thought process when faced with a choice of committing a crime or not, and that they will ultimately arrive at the decision to comply with the law and avoid causing injury to others. This internal mechanism, in conjunction with the concern that a criminal penalty will be imposed, prevents most people, most of the time, from engaging in criminal activity. Additionally, current sentencing law assumes that criminal or deviant acts guided by an “end/means calculation” will be dictated by the value system of the actor. Before the actor commits a crime, he has identified a potential benefit or pleasure to be derived from engaging in a

[T]he activation of the neural substrates will occur differently if the judge sees the defendant as similarly situated to himself.

50. Joshua Correll, Bernadette Park, Charles M. Judd, & Bernd Wittenbrink, *The Police Officer’s Dilemma: Using Ethnicity to Disambiguate Potentially Threatening Individuals*, 83 J. PERSONALITY & SOC. PSYCHOL. 1314 (2002).

51. 18 U.S.C. 3553(a)(2)(B) (1984).

52. Isaac Ehrlich, *On the Usefulness of Controlling Individuals: An Economic Analysis of Rehabilitation, Incapacitation and Deterrence*, 71 AM. ECON. REV. 307 (1981).

**The conundrum
for a judge is
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criminal act. Even if the actor seems to commit the crime with very little prior analysis, he has at least quickly considered the basic outlines of the potential benefits or reward for engaging in the criminal act. Even if he decides quickly, he will compare the cost or pain that may result from the act to the potential benefit. This analysis will prevent the actor

from proceeding or it will inspire the actor to proceed.

The guilt from causing another person injury or pain will serve as a cost to the person who is able to feel for other human beings and to empathize when seeing others in pain. The more he is able tap into this feeling of human empathy, the greater the cost of injuring another person. It is this sense of empathy, the caring for others, the guilt at injuring a stranger, that some philosophers and theologians claim makes us human and sets us aside from others in the animal kingdom.

If the actor does not conclude that causing pain to others is a significant cost, it may be that the actor does not feel pain or suffer emotional detriment when hurting others. Moreover, if the actor derives pleasure from causing pain, the process of hurting another person through violence or the taking of property will be seen as a benefit and will skew the calculation significantly.

If the apprehension against engaging in criminal behavior is not internally derived through sufficient moral character, empathy, or “humanness,” the motivation must be derived externally. The possibility of apprehension and punishment or retribution for engaging in acts that cause others pain will mitigate against the benefit as perceived by the actor. However, the more deviant the actor’s analysis of benefit (i.e., the more he derives pleasure from pain or, conversely, the less he derives pain or perceives cost when he injures others), the greater the punishment required to tip the scales against engaging in criminal behavior. If internal motivation or deterrence (i.e., morality or human empathy) to avoid criminal behavior is low, then the level of external motivation or deterrence (i.e., the sentence) must necessarily be higher. Therefore, it will take a more severe sentence to balance the decision-making process of a person with low internal motivation or reduced “human empathy.”

When a judge is determining an appropriate sentence, the

analysis regarding the internal and external motivations of a defendant must be considered. The lower the internal motivation to avoid criminal activity, the more dangerous the individual may be, or, minimally, the more likely the individual may be to engage in future criminal activity. So the object of increased punishment is to increase external deterrence for those *without* the requisite “humanness,” “ethical proclivities,” or “moral commitments” to achieve sufficient internal deterrence.⁵³

The conundrum for a judge is whether or not there are hidden factors in the judge’s decision-making process, motivating the judge to increase the sentences for some individuals but not others. If a judge presumes that some defendants that come before his court are less able to engage in internal deterrence, the defendant may receive a higher penalty to achieve the balance in the actor’s cost-benefit analysis. However, if that assessment of “humanness,” “ethical proclivities,” or “moral commitment” is based on factors outside of the evidence presented in court, the sentencing process falls outside of the bounds of law.

UNCONSCIOUS DEHUMANIZATION OF MARGINALIZED GROUPS

In a study conducted at Princeton University, participants were required to make judgments about people whom they had not met previously but who were described as having particular attributes. As the participants made the judgments about each person, their brains were scanned using fMRI. There were three people described: 1) a person who was socioeconomically disadvantaged (i.e., homeless people); 2) an IV-drug user; and 3) a person who was not addicted to drugs and who was presumably middle class.⁵⁴ While making the judgments, the participants used a distinctly different part of their neuro-anatomy for the stigmatized groups (i.e., IV-drug users and homeless people) than for the non-stigmatized groups. The participants specifically failed to use the portion of the brain, the medial prefrontal cortex (mPFC) that is necessary for encoding individuals as social beings.⁵⁵ If we fail to use the mPFC to consider and judge individuals, we have effectively dehumanized them. The mPFC allows us to process exclusively human emotions for others, such as pity and pride.⁵⁶ If we are not activating our mPFC when considering certain individuals from particular social categories, we are not feeling exclusively human emotions such as pity or pride for them.⁵⁷

This process of dehumanizing “others” is likely more pro-

53. “[T]he debate among criminal law theorists as to how best to capture an agent’s culpability reflects the tension between a focus on grammar and a focus on meaning. An emphasis on particular mental state terms, such as intention or belief, values the individual parts of an agent’s decision-making. This grammatical focus leads to descriptive *mens rea* terminology. In contrast, those who focus upon the overall blameworthiness of an actor’s choice—its wickedness, indifference, and the like—focus upon the meaning of the actor’s choice. From this perspective, our *mens rea* terminology is decidedly normative. The question of whether to focus on descriptive *mens rea* or normative *mens rea* is a debate about whether to focus on the parts or whether to focus on the whole.” Kimberly Kessler Ferzan, *Holistic Culpability*, 28 CARDOZO L. REV.

2523, 2523-2524 (2007).

54. Lasana T. Harris & Susan T. Fiske, *Dehumanizing the Lowest of the Low: Neuroimaging Responses to Extreme Out-Groups*, 17 PSYCHOL. SCI. 847 (2006).

55. Susan T. Fiske, Amy J.C. Cuddy, & Peter Glick, *Universal Dimensions of Social Perception: Warmth and Competence*, 11 TRENDS COGNITIVE SCI. 77 (2006).

56. Paul Rozin & April E. Fallon, *A Perspective on Disgust*, 94 PSYCHOL. REV. 23 (1987).

57. In a study of one jurisdiction’s probation presentence reports in juvenile-court cases, researchers found that probation officers tended to portray the delinquency of black youth as stemming from negative attitudinal and personality traits, while portrayal of

nounced when the otherness is based on race and, undoubtedly, potentiated when race and socioeconomic factors are combined. Socioeconomically disadvantaged defendants may be relegated to the realm of “other” by those who have achieved privilege, which may indeed include judges. However, the combination of socioeconomic disadvantage and marginalized racial identity, such as with African-Americans, would likely create an even more stark result. This increase level of dehumanization is based upon the specific animal association held in the unconscious minds of many in the United States.

A study from Stanford University demonstrated that many Caucasians in the United States more closely associate African-Americans with apes than they do with their Caucasian counterparts. In their study, participants were primed with either a picture of an African-American male or a Caucasian male (a third control group received no priming images).⁵⁸ The participants were then shown blurred images of various animals, including peacocks and apes. The initial frame was so blurry that it could not be identified, but with each advancing frame, the object became more distinct. When the image reached the 32nd frame, it was completely identifiable. However, most people were able to identify each of the animals by the 16th frame. But there was a significant difference in how quickly participants could identify the apes, versus the other animals, based upon the priming mechanism used.

Participants primed with the African-American face were able to correctly identify the picture of the ape more quickly than the other animals. Participants primed with the Caucasian face, and those who were not primed, were not able to identify the ape earlier than any of the other animals.

The association between African-Americans and apes has been advanced repeatedly in both overt and subtle ways. There is a long history of the association being used to justify the oppression and increased punishment of African-Americans, immigrants, and Jewish people during the Holocaust.⁵⁹ Historically, those who are stigmatized as less than human often receive a less rigorous application of moral considerations and rules.⁶⁰

If African-Americans are more closely associated with apes than are their Caucasian counterparts, African-Americans are seen as more closely linked with the key aspects of apes as compared to humans. African-Americans are seen by many, whether or not they realize it, to be less able to control impulses, more likely to engage in violent behavior, and lack-

ing a fully functional internal moral code.

While increased hostility increases the motivation to impose a more severe sentence, and thus ensure greater retribution, decreased humanity exacerbates this effect. More severe retribution can be imposed when the decision maker does not socially categorize a defendant as human. If a judge cannot activate the mPFC effectively to apply exclusive human emotions to a defendant, extenuating or mitigating circumstances for the act may not be factored into a sentencing decision. Additionally, if a judge sees a defendant as less than human, the judge may be unable to activate the mPFC to apply the principle of rehabilitation. Programs that allow for reintegration into society, therapeutic options, or community support may be seen by a judge as inapplicable to someone without the requisite human attributes to be capable of being rehabilitated. If a judge's neurophysiologic reaction to an African-American defendant is one of fear, threat, and distrust, then the sentencing principle of incapacitation becomes ever-more important as the judge determines the length of the sentence. Additionally, the strong association between African-American faces and crime objects will solidify the conclusion that the defendant is a criminal and belongs in prison. *A less-than-human, threatening, untrustworthy defendant who is automatically associated with negative concepts and crime cannot be easily deterred from committing crimes in the future. And a defendant who engenders increased hostility in a judge is at a distinct disadvantage throughout a criminal trial and at the time of sentencing.* More severe penalties may be imposed to ensure that someone without the requisite internal motivation and with the proclivity to engage in criminal behavior does not offend again. The end result—African-Americans, all other factors being equal, would likely receive longer sentences than their Caucasian counterparts due to the neurophysiologic reactions related to implicit biases in the mind of a judge.

Of course, evidence that demonstrates innocence or the presence of factors that may mitigate against a severe sentence would presumably override bias in the courtroom. However, if executive functioning is diminished, the decision maker's ability to “think past” the biases may be impaired. It may take more evidence to counter the negative associations. The African-American defendant may be required to present more

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white youth stressed the influence of the social environment. Black youth were judged to be more dangerous, which translated into harsher sentences than for comparable white youth. ASHLEY NELLIS, JUDY GREENE, & MARC MAUER, REDUCING RACIAL DISPARITY IN THE CRIMINAL JUSTICE SYSTEM: A MANUAL FOR PRACTITIONERS AND POLICYMAKERS (2008) (citing George S. Bridges & Sara Steen, *Racial Disparities in Official Assessments of Juvenile Offenders: Attributional Stereotypes as Mediating Mechanisms of Juvenile Offenders*, 63 AM. SOC. REV. 554 (1998)).

58. Philip Atiba Goff, Jennifer L. Eberhardt, Melissa J. Williams, & Matthew Christian Jackson, *Not Yet Human: Implicit Knowledge,*

Historical Dehumanization, and Contemporary Consequences, 94 J. PERSONALITY & SOC. PSYCHOL. 292 (2008).

59. FRANK CHALK & KURT JONASSOHN, THE HISTORY AND SOCIOLOGY OF GENOCIDE: ANALYSES AND CASE STUDIES (1990); GEORGE M. FREDRICKSON, RACISM: A SHORT HISTORY (2002); OTTO SANTA ANA, BROWN TIDE RISING: METAPHORS OF LATINOS IN CONTEMPORARY AMERICAN PUBLIC DISCOURSE (1999); Gustav Jahoda, *Images of Savages: Ancient Roots of Modern Prejudice in Western Culture*, 102 AM. ANTHROPOLOGIST 394 (2008).

60. Susan Opatow, *Moral Exclusion and Injustice: An Introduction*, 46 J. SOC. ISSUES 1 (1990).

evidence, and more reliable evidence, than his Caucasian counterpart to be acquitted or to receive a similar sentence for the same crime. Such an outcome would be abhorrent in the eyes of the justice system. Consequently, while many judges will admit that implicit bias exists and that they may hold certain biases, they remain convinced that their thoughtful and rigorous process of decision making as well as the application of the evidence rules and the penal code will minimize the effects of the bias.

CONCLUSION

Simply saying that neurophysiologic processes implicated in bias affects criminal sentencing is a gross over-simplification. Instead we must recognize that there are multiple aspects of decision making that increase the level of bias in legal analysis. These aspects potentiate the assessment of fear, threat, and aversion; increase the level of aggression; decrease pain empathy for African-Americans and encoding of African-Americans as human; and decrease the use of portions of the brain that use information other than bias to reach conclusions about individuals. Understanding the complexity of the forces affecting judges as they hand down sentences allows the policy-makers to devise more effective solutions. Assuming that judges can simply try harder to be fair, take more time when making decisions, or utilize their egalitarian

value systems to eliminate bias in their decision-making process is naïve. The solutions should be tailored to the neurophysiologic reactions and the psychological processes that infuse bias into the sentencing decisions. As judges and legislators across the country become more amenable to change, these solutions will be instituted. However, acceptance of the implicit bias, the neuro-scientific correlates, and their role in the sentencing process is the first step.



Kimberly Papillon lectures nationally and internationally on the neuroscience and psychology of legal, judicial, and medical decision making. She has lectured regularly at the National Judicial College in Reno, Nevada, and has served on a national training team on implicit bias for the National Center for State Courts. She has presented more than 100 lectures on topics such as the implications of neuroscience, psychology, and implicit association in the analysis of judicial decision making. Papillon has a law degree from the Columbia University School of Law, and she once served as the Statewide Fairness Education Project Manager and Senior Education Specialist in the Education Division of the California Judicial Council's Administrative Office of the Courts.